

EXECUTIVE SUMMARY

Cardiovascular disease (CVD), consisting of heart disease and stroke, is a serious and costly disease. Although a largely preventable and controllable disease, CVD claims thousands of lives each year (many of those among residents under 65 years of age), is a leading cause of disability, and results in enormous medical expenses.

To better understand the impact of CVD in Nebraska, a variety of state and national data sources were selected to look at multiple aspects of CVD and its associated risk factors. Within this report, a total of 14 Nebraska data sources were used to examine one or more aspects of CVD.

Highlights: CVD in Nebraska

- About 1 in every 10 Nebraska adults (or an estimated 100,000 to 143,000 adults) has been diagnosed (by a doctor, nurse, or health professional) with coronary heart disease, or have had a heart attack or stroke; placing them at extremely high risk for future heart attacks and strokes.
- CVD continues to be the leading cause of death among both genders and all racial and ethnic groups (except Asians) in Nebraska.
- In 2001, CVD killed 5,763 Nebraska residents (an average of 16 deaths per day) and claimed more lives than the next five leading causes of death combined.
- CVD is the leading cause of hospitalization in Nebraska, having accounted for at least 7,260 ER visits and 27,710 hospitalizations among Nebraska residents in Nebraska hospitals during 2001.
- The cost for cardiovascular care is enormous and appears to be increasing. From 1996 to 2001, the average charge per hospitalization due to CVD increased 44 percent while the average charge per ER visit increased 38 percent. Through 2001 State of Nebraska general funds, "taxpayer-supported" Medicaid paid approximately \$45.7 million for medical visits, prescription drugs, and hospitalizations due to CVD among Nebraska enrollees. Furthermore, obesity among all Nebraska adults costs approximately \$454 million per year in direct medical expenses (accounting for around 5.8% of all adult medical expenses each year).
- In 2000, (at least) 5,584 EMS transports occurred among people in Nebraska that were having a suspected cardiac event. The average EMS response time for a suspected cardiac event was approximately 10 minutes from dispatch to the scene (or individual in need) and nearly 30 minutes from the scene to the health care facility. In contrast, it takes just 4 minutes for the body to sustain brain damage without oxygen.
- People in Nebraska are not engaging in adequate amounts of physical activity and are engaging in unhealthy eating. In 2001, Nebraska adults ranked 50th lowest (out of 51) in recommended physical activity among all 50 U.S. states and the District of Columbia. In addition, both youth and adults rank well below the national average in the consumption of the USDA's recommendation of five or more servings of fruits and vegetables per day.
- Subsequently, people in Nebraska are increasingly overweight and obese. Between 1990 and 2002, obesity among Nebraska adults doubled, increasing from 11.6 percent to 23.2 percent. Furthermore, one-third of Nebraska youth in grades K-12 are either at risk for overweight or overweight.
- High blood pressure and cholesterol are important health concerns for people in Nebraska. Nearly 1 in every 4 (23%) Nebraska adults has been diagnosed with high blood pressure while more than 1 in every 4 (28%) has been diagnosed with high blood cholesterol (among those that have ever had a cholesterol screening). Surprisingly, among the 54 U.S. states and territories in 2001, Nebraska adults ranked second lowest in the percentage that have had a cholesterol screening during their lifetime, second only to Guam.

- About 1 in every 17 Nebraska adults (6%) has been diagnosed with diabetes, and diabetes mortality rates in Nebraska have increased in recent years.
- The prevalence of current cigarette smoking among Nebraska adults has remained virtually unchanged since 1989, at 23 percent in 2002. In contrast, about 1 in every 5 Nebraska high school students (24%) currently smoke cigarettes, a trend that is beginning to decline.
- When CVD risk factors are combined, the risk for heart attack and stroke dramatically increases. More than 8 in every 10 (83%) Nebraska adults has one or more CVD risk factors, nearly half has 2 or more CVD risk factors (46%), and nearly 1 in every 5 (18%) has 3 or more CVD risk factors (out of six possible risk factors).
- There are a variety of barriers that are impacting both primary and secondary prevention efforts for CVD in Nebraska. Primary prevention barriers include: excessive amounts of time spent using electronic devices (including televisions, video games, and computers); high-risk weight loss methods, and numerous unrealized opportunities within communities, worksites, and schools that could result in increases in physical activity and healthy eating. Secondary prevention barriers include: failure to properly recognize the signs and symptoms of a heart attack and stroke; limited aspirin use among people at high risk for CVD; lack of health care coverage among those 18-64 years of age; EMS and 9-1-1 coverage for persons in sparsely populated regions; and quality of care issues within the health care system.
- CVD is often perceived as a disease of the elderly. On the contrary, CVD is actually the second leading cause of premature death in Nebraska and is a major contributor to medical care and expenses among persons under 65. Developing CVD during ones' productive years of life can result in missed work days and less productivity and can (indirectly) be detrimental to Nebraska's economy.
- Medicaid enrollees (a predominately young population) are at extremely high risk for CVD related mortality and medical care in Nebraska. In 2001, 1 in every 4 CVD deaths in Nebraska occurred among people enrolled in the Nebraska Medicaid system at their time of death, making them 3.5 times more likely than non-Medicaid enrollees to die from CVD.
- Other populations in Nebraska at high-risk for CVD include African Americans, Native Americans, Hispanics, persons of low socioeconomic status, and persons living in rural communities.

What the future holds for CVD in Nebraska

- Of all children born today in America, nearly half (47%) are expected to die from CVD, while 22% are expected to die from cancer.
- National increases in obesity and diabetes are resulting in increases in hypertension, hyperlipidemia, and atherosclerotic vascular disease.
- The aging of Nebraska's population will result in more heart disease and stroke, likely increasing the economic impact.

Conclusion

Nebraska must brace itself for the future of CVD. To achieve success, and ultimately decrease the burden of CVD, Nebraska must support and offer more cost-effective treatments and place a stronger emphasis on primary prevention. Living with CVD has serious implications on quality of life and creates economic hardship. Individuals with CVD often require prescription medication and medical procedures that result in missed work, enormous out-of-pocket medical expenses, and disabilities that prevent active daily living. In addition, CVD is placing a large financial burden on employers, the insurance industry, the government, and the health care system. As a result, it is not only critical to effectively treat cardiovascular disease, but it is equally important to prevent CVD from progressing to the stages that require medical attention. Consequently, individuals, families, communities, schools, worksites, health care, media, faith-based organizations, and government must unite to address this problem.

REPORT HIGHLIGHTS

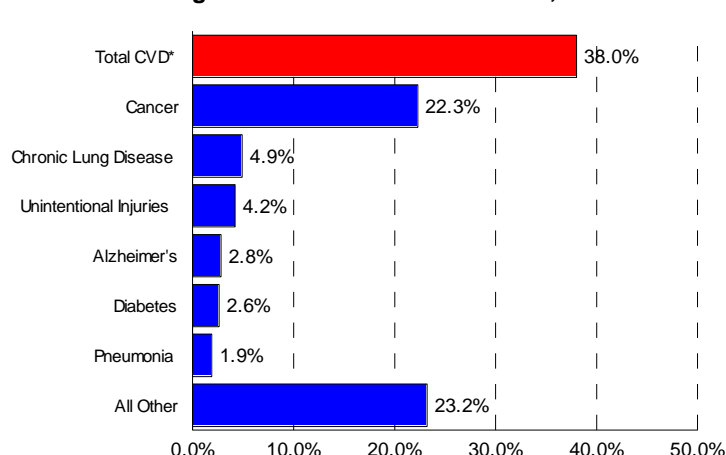
Living with CVD

- About 1 in every 10 Nebraska adults (or an estimated 100,000 to 143,000 adults) reported that they have been diagnosed (by a doctor, nurse, or health professional) with coronary heart disease or have had a heart attack or stroke during their lifetime¹. Subsequently, these individuals are at extremely high risk for a recurrent heart attack or stroke.
- While experiencing a heart attack or stroke motivates some people to engage in healthier behaviors, this is not the case for many people in Nebraska. Among Nebraska adults reporting that they have been diagnosed with coronary heart disease or have had a heart attack or stroke, more than 1 in every 5 currently smokes cigarettes, more than 1 in every 3 is obese, more than 2 in every 5 do not engage in any leisure time physical activity, and 7 in every 10 do not consume the USDA's recommendation of five or more servings of fruits and vegetables per day (5-a-day)¹.

Mortality due to CVD²

- In Nebraska, CVD continues to be the leading cause of death among both genders and all racial and ethnic groups (except Asians).
- In 2001, CVD killed 5,763 Nebraska residents for an average of 16 deaths per day. Of all Nebraska deaths in 2001, 2 in every 5 (38%) resulted from CVD.
- CVD killed more Nebraska residents in 2001 than the next five leading causes of death combined (including cancer, chronic lung disease, unintentional injuries, Alzheimer's, and diabetes).
- CVD is often perceived as being a disease of the elderly. On the contrary, CVD is actually the second leading cause of premature death in Nebraska. Between 1999 and 2001, CVD killed more than 2,000 residents under the age of 65 and claimed about 60,000 years of productive life.
- While total CVD mortality rates are declining in Nebraska; stroke mortality rates have leveled off in recent years, heart failure mortality rates are increasing dramatically among older adults, and high blood pressure mortality rates are increasing among females.
- Even though CVD mortality rates are declining, some research has indicated that these declines are resulting from improvements in medical treatment rather than from less CVD^{3,4}. In addition, due to the aging of Nebraska's population, the actual number of deaths per year is declining at a much slower pace than the rate of death. This indicates that the impact from CVD on the health care system in Nebraska is likely remaining stable or in some cases may be worsening.
- Unfortunately, many CVD deaths in Nebraska occur without hospital care. Between 1999 and 2001, nearly 2 in every 3 CVD deaths (65%) occurred outside of inpatient hospital care, likely resulting from sudden or near sudden death. There are a variety of effective interventions available to treat CVD; however, most have a limited window for administration. As a result, it is critically important that victims recognize their signs, act immediately by calling 9-1-1, and have quality emergency medical services available. It is also critical that health professionals properly diagnose and treat the condition.

Leading Causes of Death in Nebraska, 2001

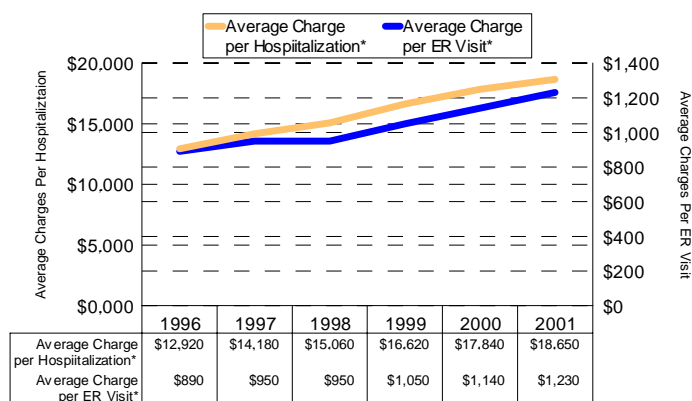


*Includes Heart Disease, Stroke, and other CVD related deaths (ICD-10 Codes 100-199)
Source: Nebraska Vital Records

Medical Care and Expenses due to CVD

- Cardiovascular disease is the leading cause of hospitalization in Nebraska. During 2001, at least 7,260 ER visits and 27,710 hospitalizations due to CVD occurred among Nebraska residents in Nebraska hospitals⁵.
- About 1 in every 3 hospitalizations due to CVD during 2001 resulted in either death during hospitalization or discharge for follow-up care⁵.
- In 2001, Nebraska hospitals charged payers more than \$517 million for hospitalizations and more than \$9 million for ER visits resulting from CVD⁵.
- From 1996 to 2001, the average charge per hospitalization due to CVD increased 44 percent (from \$12,920 to \$18,650 per stay) while the average charge per ER visit increased 38 percent (from \$890 to \$1,230 per visit)⁵.
- Of all payers, Medicaid had the most dramatic increase (from 1996-2001) in medical charges per hospitalization due to CVD, increasing 87 percent (from \$12,800 to \$23,900 per stay)⁵.
- "Taxpayer-supported" Medicaid paid \$114.6 million for medical visits, prescription drugs, and hospitalizations due to CVD among Nebraska enrollees in 2001; of which approximately \$45.7 million was paid through State of Nebraska general funds⁶.
- In 2001, at least 36,000 cardiovascular operations and procedures were performed on Nebraska residents in Nebraska hospitals (of which 43% were performed on residents under 65 years of age)⁵.
- In 2000, at least 5,584 EMS transports occurred among people in Nebraska that were having a suspected cardiac event. The average EMS response time for a cardiac event was approximately 10 minutes from dispatch to the scene (or individual in need) and nearly 30 minutes from the scene to the health care facility. In contrast, it takes just 4 minutes for the body to sustain brain damage without oxygen⁷.

Trends in the Estimated Charge per Hospitalization and ER Visits Due to CVD* in Nebraska, 1996-2001



*Includes ICD-9-CM Codes 390-459

Note: hospitalization and ER visit costs are estimates because they are based on hospitalization data that range 82-87% complete and ER visit data that ranges from 75-80% complete for any one year between 1996 and 2001

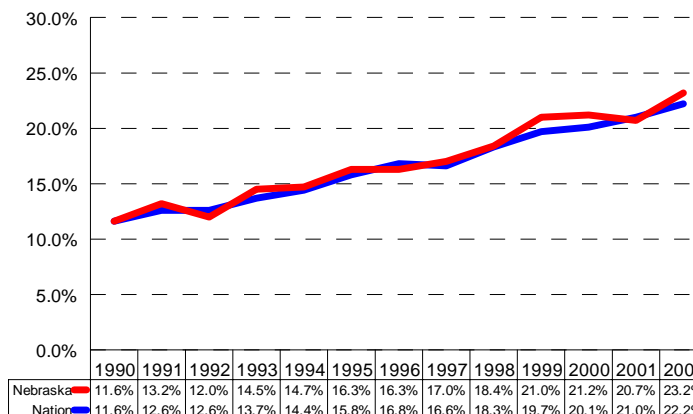
Source: Nebraska Hospital Discharge Data

Risk Factors for CVD

Overweight and Obesity

- Obesity among Nebraska adults doubled between 1990 and 2002, increasing from 11.6 percent to 23.2 percent⁸.
- Obesity among Nebraska adults costs \$454 million per year in direct medical expenses while accounting for around 5.8 percent of all adult medical expenses per year in Nebraska⁹.
- During the 2002-2003 academic school year, 1 in every 3 Nebraska youth in grades K-12 was identified as either at risk for overweight or overweight¹⁰.

Obesity* Trends among NE and U.S. Adults



*BMI (weight in kilograms divided by height in meters squared) of 30 or greater

Sources: Nebraska Behavioral Risk Factor Surveillance System; National Behavioral Risk Factor Surveillance System <www.cdc.gov/bfss/index.htm>

Lack of Physical Activity

- In 2001, just 1 in every 3 Nebraska adults (34%) engaged in a recommended level of physical activity⁸. This ranked Nebraska adults 50th lowest (out of 51) in recommended physical activity among all 50 U.S. states and the District of Columbia¹¹.
- Among Nebraska high school students in 2003, just 1 in every 5 (19%) engaged in a sufficient level of physical activity in all its forms (including moderate, vigorous, and strengthening exercise)¹².

Unhealthy Eating

- In 2002, less than 1 in every 5 Nebraska adults (18%) consumed five or more servings of fruits and vegetables per day (5-a-day) while just 1 percent consumed 9-a-day⁸. Nebraska adults ranked 4th lowest in 5-a-day consumption among 54 U.S. states and territories during 2002¹¹.
- In 2003, 1 in every 4 Nebraska high school students (24%) consumed 32 or more ounces of soda per day. In contrast, during the same year, less than 1 in every 5 students consumed 3 or more glasses of milk per day (18%) while just 1 in every 6 students consumed 5-a-day (16%)¹².

High Blood Pressure

- In 2001, nearly 1 in every 4 Nebraska adults (23%) indicated that they have been diagnosed with high blood pressure (by a doctor, nurse, or health professional) during their lifetime⁸.

High Blood Cholesterol

- Among 54 U.S. states and territories in 2001, Nebraska adults ranked second lowest in the percentage that have had a cholesterol screening during their lifetime, second only to Guam¹¹.
- Among Nebraska adults that have ever had a cholesterol screening, more than 1 in every 4 (28%) indicated, during 2001, that they have been diagnosed with high blood cholesterol (by a doctor, nurse, or health professional) during their lifetime⁸.

Diabetes

- The death rate from diabetes in Nebraska increased 50 percent between 1990 and 2000¹³.
- In 2002, about 1 in every 17 Nebraska adults (6%) indicated that they have been diagnosed with diabetes (by a doctor, nurse, or health professional) during their lifetime⁸.

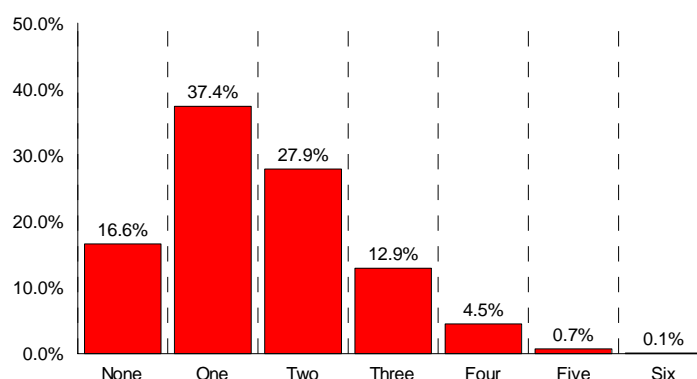
Cigarette Smoke

- Nearly 1 in every 4 Nebraska adults (23%) smoked cigarettes in 2002, a stable trend since 1989⁸.
- In 2003, about 1 in every 5 Nebraska high school students (24%) smoked cigarettes¹². However, this percentage is beginning to decline.
- About one-fourth of Nebraska adults allowed smoking in their home or family vehicle while 23 percent of employed Nebraska adults reported that smoking was allowed in one or more work areas (at their place of employment) in 2003¹⁴.

Multiple Risk Factors for CVD

- When CVD risk factors are combined, the risk for heart attack and stroke dramatically increases. During 2001, more than 8 in every 10 (83%) Nebraska adults had one or more CVD risk factors, nearly half had 2 or more CVD risk factors (46%), and nearly 1 in every 5 (18%) had 3 or more CVD risk factors⁸.

**Number of Preventable Risk Factors for CVD*
Among Nebraska Adults, 2001**



*From the following six CVD risk factors: obesity, no recommended physical activity, high blood pressure, high blood cholesterol, diabetes, and current cigarette smoking
Missing data=522 cases (14.1%)
Source: 2001 Nebraska Behavioral Risk Factor Survey

Barriers to Cardiovascular Health

Barriers to the primary prevention of CVD

- Electronic entertainment is a major source of free time activity for people in Nebraska. During 2003, Nebraska adults indicated that they spend, on average, 2 hours and 42 minutes per day watching television (while sitting or lying down) and/or using the computer (outside of work)¹⁴. Nebraska high school students indicated, during 2003, that they spend, on average, more than 3 and 1/2 hours during an average school day watching television, using video game systems, and/or using the computer (excluding homework)¹².
- Among Nebraska high school students that were currently trying to lose weight in 2003, 1 in every 3 (34%) used a high-risk weight loss method to try to lose weight, such as fasting, diet pills, vomiting and/or laxative use¹².
- Most worksites in Nebraska provide little or no support for physical activity¹.
- Nebraska residents regularly frequent restaurants, fast food shops, and food stands without the selection of the lower-fat items they desire¹.
- Student at some Nebraska elementary schools are not being allowed to walk and bike to school as frequently as they desire¹⁵.
- Perceived neighborhood safety from crime is a concern for many Nebraska adults, especially for those at lower socioeconomic status and those living in urban environments¹.
- While public schools in Nebraska (teaching grades 6-12) offer some supports for physical activity and healthy eating, opportunities exist to offer many more physical activity and healthy eating supports.

Barriers to the secondary prevention of CVD

- While the vast majority of Nebraska adults recognized 9-1-1 as the first emergency response option for a heart attack or stroke in 2001, just 1 in every 8 (13%) correctly identified all heart attack signs and symptoms, and just 1 in every 5 correctly identified all stroke signs and symptoms¹.
- Less than half of Nebraska adults (35 and older) with high blood pressure, high blood cholesterol, and diabetes took aspirin regularly in 2001 (among those with no aspirin-related health problems)¹.
- In 2002, approximately 145,000 Nebraska adults under 65 years of age (or about 1 in every 7) indicated that they have no health care coverage⁸.
- EMS response times for suspected cardiac events average 40 minutes from dispatch to arrival at a health care facility, and are higher for residents in rural counties⁷.
- In 2003, nearly half of Nebraska Medicaid Managed Care enrollees with high blood pressure did not have their blood pressure controlled while about 1 in every 6 diabetics did not receive a hemoglobin A1c (HbA1c) test⁶.
- In 2002, more than 1 in every 5 (22%) Nebraska Medicare enrollees hospitalized for acute myocardial infarction failed to receive a beta-blocker within the 24 hours after hospital arrival¹⁶.

High-Risk Populations

Medicaid Enrollees

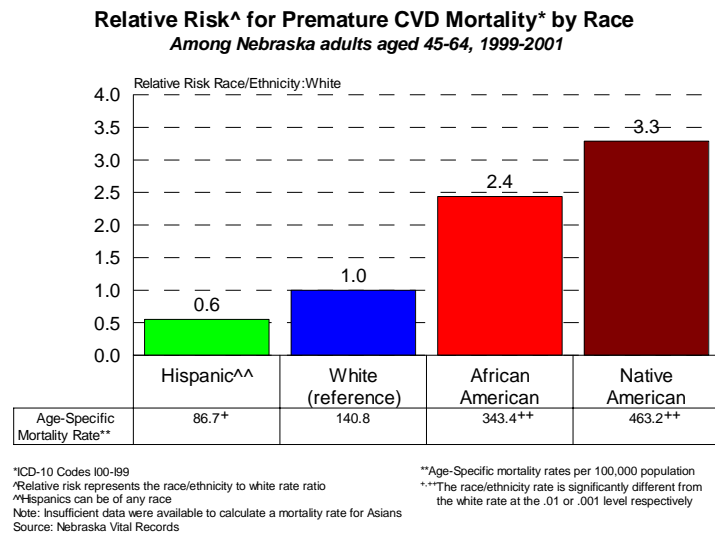
- Medicaid enrollees (a predominately young population) accounted for 1 in every 4 CVD deaths in Nebraska during 2001, while making up just 11 percent of the states population¹⁷.
- Medicaid enrollees in Nebraska were 3.5 times more likely than non-Medicaid enrollees to die from CVD in 2001¹⁷.
- In 2001, Medicaid enrollees accounted for more than 140,000 medical encounters due to CVD (including inpatient, outpatient, ER, and physician office visits)⁶.
- More than 33,000 Nebraska Medicaid enrollees (or about 17% of all enrollees) filled a CVD related drug prescription in 2001⁶.
- In 2001, "taxpayer-supported" Medicaid paid \$84.7 million for medical visits (including outpatient, ER, and physician office visits, \$17.8 million for prescription drugs, and \$12.2 million for hospitalizations due to CVD among Nebraska enrollees⁶.

Both Genders

- Males in Nebraska are at greater risk for CVD mortality, hospitalization, and most risk factors (with the greatest disparities occurring among middle aged adults).
- Heart disease kills more females than males each year and is the leading cause of death among females in Nebraska. For every 1 breast cancer death nearly 9 heart disease deaths occur among females in Nebraska. However, about half of all adult females nationally perceive breast cancer as their most serious health threat (46%) compared to just 4 percent that perceive heart disease as their most serious health threat¹⁸.

African Americans

- In Nebraska, African Americans are more likely than Whites to die from heart disease (relative risk 1.3) and stroke (relative risk 1.5), to be obese, to have diagnosed high blood pressure, to have diagnosed diabetes, to smoke cigarettes, and to have multiple risk factors for CVD; while they are less likely than Whites to consume 5-a-day, engage in physical activity, and have health care coverage.



Native Americans

- Native Americans in Nebraska are more likely than Whites to die from heart disease (relative risk 1.8), to be obese, to have diagnosed diabetes, to smoke cigarettes, and to have multiple risk factors for CVD; while they are less likely than Whites to have health care coverage.

Hispanics

- Hispanic youth in Nebraska are much more likely than White youth to be overweight. Furthermore, Hispanics in Nebraska are less likely than Whites to consume 5-a-day, to have had a current blood cholesterol screening, to engage in physical activity, and to have health care coverage.

Middle Age Adults

- These individuals are in their most productive years of life. Unhealthy behaviors that result in missed work days and less productivity can (indirectly) be detrimental to Nebraska's economy. As mentioned previously, CVD is a major contributor to death and medical care among Nebraska residents under 65 years of age, and obesity is most common among Nebraska adults age 45-64.

Low Socioeconomic Status

- Compared to Nebraska adults with high education and income, those with low education and income are more likely to be obese, have diagnosed high blood pressure (among those 35-64), have diagnosed diabetes, smoke cigarettes, and have multiple risk factors for CVD; while being less likely to consume 5-a-day, engage in physical activity, have had a current cholesterol screening, correctly identify all heart attack and stroke signs and symptoms, and have health care coverage.

Rural Nebraska

- Nebraska residents in rural counties (outside of Douglas, Lancaster, and Sarpy) have less access to care, including less health care coverage, longer EMS response times, and lower quality 9-1-1 services. Furthermore, due to their larger older adult populations, residents of rural counties place a greater per-capita demand on the health care system.